JQuery

- **Events**
  - Browsers are preprogrammed to recognize certain actions such as clicking, page loading, mouse movements etc.
  - You write programs to respond to these events

- **Two Step process**
  - Identify the element that you want to respond to the event
  - Assign an event and create a function to run when event occurs

JQuery

- **Mouse Events**
  - Click, dblclick, mousedown, mouseup, mouseover, mouseout, mousemove
- **Document/Window Events**
  - Load, resize
- **Form Events**
  - Submit, reset, change, focus, blur
- **Keyboard Events**
  - Keypress, keydown

JQuery

- **Techniques for using Events**
  - Inline Events

    <a href=“somepage.html” onmouseover =“alert(‘Some Message’);”>Link</a>

    - Add the word”on” to the event
    - Add directly inside of HTML
    - Downside: JS is now scattered throughout your HTML
  - **Traditional Technique**
    - Assign the event to an element but stay out of the HTML
    - Within the <script> tags in head or body add window.onload=message;
      - Here a function called message is called after the page loads
      - function is assigned but not run immediately

JQuery

- **Techniques for using Events**
  - Previous techniques only allow 1 function assigned to 1 event per element (tag)
  - Introduce W3C Event Listeners
    - Firefox, Safari and Opera handle differently than IE

- **JQuery Way**
  - Select element
    - `$("a")`
  - Assign an event
    - `$("a").mouseover()`
  - Pass function to event or use anonymous function
    - `$("a").mouseover(MyFunction)`

JQuery

- Example of mouseover event that shows a submenu when menu selected:

```
$("#menu").mouseover(function() {
  $("#submenu").show();
});
```

  - Uses anonymous function

JQuery

- Stopping a mormal event action
  - Example: when a link is clicked the URL is followed
    - To stop that action:
      - The action is part of the event object
      - We can reference the event object and call .preventDefault();

```
$("#menu").click(function(evt){
    //Some JavaScript code here
    Evt.preventDefault();
});
```

JQuery

- **Forms**
  - Form example
    - Selecting Form Elements
    - Assign an ID to it

```
<input name="user" type="text" id="user">
var userfield = $("#user");
```

    - Manipulating Selected form element
      - val will get the value of the element:

```
var userfield = $('#user').val();
```

- **Selecting all form elements of certain type:**
  - `$(":text")`
    - Selects all text fields
  - Use with :input (all form elements), :password, :radio, :checkbox, :submit, :image, :reset, :button, :file, :hidden
  - Can use descendant selectors too `$("#signup : text")`

JQuery

- Set the value of a form element

```
var fieldvalue = $(“#total”).val(Yourvalue);
```

- Determining if box is checked

```
if ($(“#total”).attr(“checked”)) {
    Do stuff if box is checked
}
else {
  Do stuff if box is not checked
}
```

JQuery

- Form Events
  - Submit

```
$(document).ready(function() {
 $("#signup").submit(function() {
        if ($("#username").val() == "")
        {
              alert ("Name is required");
              return false;
        }
  })
});
```

JQuery

- **Focus**
  - Example: Auto erases default text in a field when it gets the focus

```
<input name="username" type="text" id="username" value="Type your user name">

$("#username").focus(function() {
    var field = $(this);

    if(field.val()==field.attr("defaultValue"))
    {
        field.val("");
    }
});
```

JQuery

- **Blur**

```
<input name="quantity" type="text" id="qty">

$("#qty").blur(function) {
    var fieldValue = $(this).val();

    if (isNaN(fieldValue))
    {
        alert("Please enter a number");
    }
});
```

JQuery

- **Click**
  - If any radio button is clicked

```
$(“:radio”).click(function() {
    do stuff
});
```

- Can add focus to the first element of the form:

```
$(‘username’).focus;
```

What is jQuery?

- JavaScript Library

- Functionality
  - DOM scripting & event handling
  - Ajax
  - User interface effects
  - Form validation

Why jQuery?

- Lightweight – 14kb (Minified and Gzipped)
- Cross-browser support (IE 6.0+, FF 1.5+, Safari 2.0+, Opera 9.0+)
- CSS-like syntax – easy for developers/non-developers to understand
- Active developer community
- Extensible - plugins

JQuery

- Powerful JavaScript library
  - Simplify common JavaScript tasks
  - Access parts of a page
    - using CSS or XPath-like expressions
  - Modify the appearance of a page
  - Alter the content of a page
  - Change the user’s interaction with a page
  - Add animation to a page
  - Provide AJAX support
  - Abstract away browser quirks

Example – Show/Hide the old way

```
<a href="#" onclick="toggle_visibility('foo');">Click here to toggle visibility of #foo</a>
```

```
function toggle_visibility(id) {
  var e = document.getElementById(id);

  if(e.style.display == 'block')
      e.style.display = 'none';
  else
      e.style.display = 'block';
}
```

Example – Show/Hide with jQuery

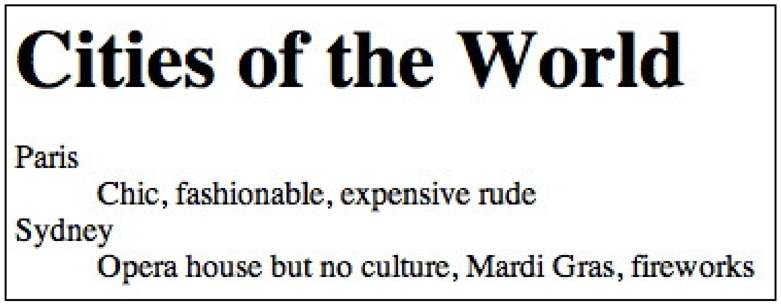
```
$().ready(function(){
    $("a").click(function(){
        $("#more").toggle("slow");
        return false;
    });
});
```

Introductory Sample

```html
<html>
<body>
<h1>Cities of the World</h1>
<dl>
<dt>Paris</dt>
    <dd>Chic, fashionable, expensive rude</dd>
<dt>Sydney</dt>
   <dd>Opera house but no culture, Mardi Gras,
          fireworks</dd>
</dl>
</body>
</html>
```

```css
h1 {font-size: 2.5em;
   margin-bottom: 0;}

.emphasize {font-style:
   italic; color:red;}
```



Cities of the World

Paris
    Chic, fashionable, expensive rude
Sydney
    Opera house but no culture, Mardi Gras, fireworks

Basic JQuery

- Selecting part of document is fundamental operation
- A JQuery object is a wrapper for a selected group of DOM nodes
- $() function is a factory method that creates JQuery objects
- $(“dt”) is a JQuery object containing all the “dt” elements in the document

Basic JQuery

- .addClass() method changes the DOM nodes by adding a ‘class’ attribute
  - The ‘class’ attribute is a special CSS construct that provides a visual architecture independent of the element structures

- $(“dt”).addClass(“emphasize”) will change all occurrences of <dt> to <dt class=“emphasize”>

- See also .removeClass()

Basic JQuery

- To make this change, put it in a function and call it when the document has been loaded and the DOM is created

```
function doEmph(){$("dt").addClass("emphasize")}
<body onLoad="doEmph()">
```

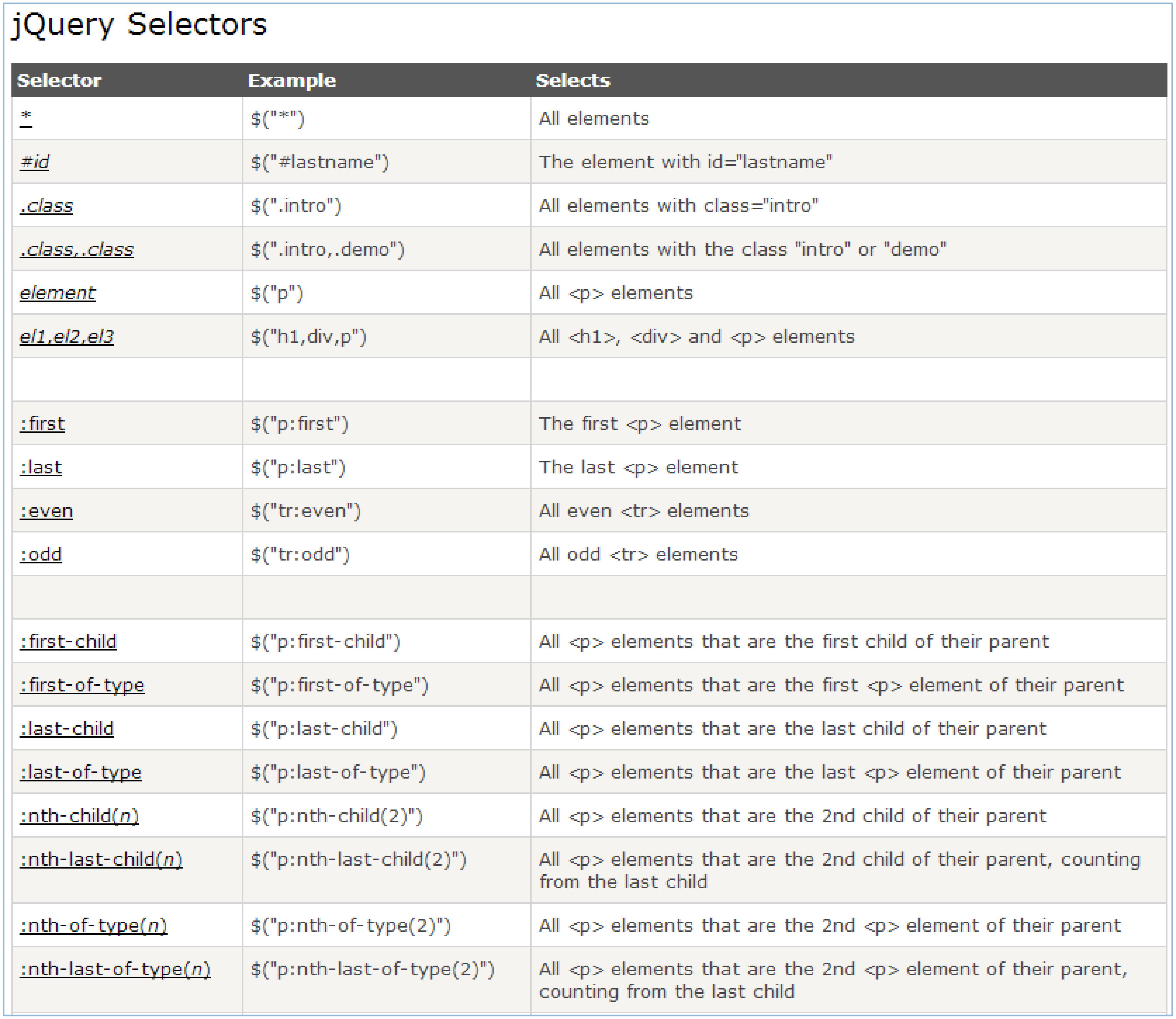
- We had to alter the HTML (bad)
- Structure and appearance should be separated!
- Also, onLoad waits until all images *etc* are loaded. Tedious.

Basic JQuery

- JQuery provides an independent scheduling point after DOM is created and before images are loaded
  - $(document).ready(doEmph);
- No HTML mods required. All done in script.
- Better solution:

```
        $(document).ready(function(){
                $("dt").addClass("emphasize")
        });
```

```
<html><head>
<script src="jquery.js" type="text/javascript"></script>
<script src="test.js" type="text/javascript"></script>
…
```



jQuery Selectors

Selector	Example	Selects
*	$("*")	All elements
#id	$("#lastname")	The element with id="lastname"
.class	$(".intro")	All elements with class="intro"
.class,.class	$(".intro,.demo")	All elements with the class "intro" or "demo"
element	$("p")	All <p> elements
el1,el2,el3	$("h1,div,p")	All <h1>, <div> and <p> elements
:first	$("p:first")	The first <p> element
:last	$("p:last")	The last <p> element
:even	$("tr:even")	All even <tr> elements
:odd	$("tr:odd")	All odd <tr> elements
:first-child	$("p:first-child")	All <p> elements that are the first child of their parent
:first-of-type	$("p:first-of-type")	All <p> elements that are the first <p> element of their parent
:last-child	$("p:last-child")	All <p> elements that are the last child of their parent
:last-of-type	$("p:last-of-type")	All <p> elements that are the last <p> element of their parent
:nth-child(*n*)	$("p:nth-child(2)")	All <p> elements that are the 2nd child of their parent
:nth-last-child(*n*)	$("p:nth-last-child(2)")	All <p> elements that are the 2nd child of their parent, counting from the last child
:nth-of-type(*n*)	$("p:nth-of-type(2)")	All <p> elements that are the 2nd <p> element of their parent
:nth-last-of-type(*n*)	$("p:nth-last-of-type(2)")	All <p> elements that are the 2nd <p> element of their parent, counting from the last child

:only-child	$("p:only-child")	All <p> elements that are the only child of their parent
:only-of-type	$("p:only-of-type")	All <p> elements that are the only child, of its type, of their parent
parent > child	$("div > p")	All <p> elements that are a direct child of a <div> element
parent descendant	$("div p")	All <p> elements that are descendants of a <div> element
element + next	$("div + p")	The <p> element that are next to each <div> elements
element ~ siblings	$("div ~ p")	All <p> elements that are siblings of a <div> element
:eq(*index*)	$("ul li:eq(3)")	The fourth element in a list (index starts at 0)
:gt(*no*)	$("ul li:gt(3)")	List elements with an index greater than 3
:lt(*no*)	$("ul li:lt(3)")	List elements with an index less than 3
:not(*selector*)	$("input:not(:empty)")	All input elements that are not empty
:header	$(":header")	All header elements <h1>, <h2> ...
:animated	$(":animated")	All animated elements
:focus	$(":focus")	The element that currently has focus
:contains(*text*)	$(":contains('Hello')")	All elements which contains the text "Hello"
:has(*selector*)	$("div:has(p)")	All <div> elements that have a <p> element
:empty	$(":empty")	All elements that are empty
:parent	$(":parent")	All elements that are a parent of another element
:hidden	$("p:hidden")	All hidden <p> elements
:visible	$("table:visible")	All visible tables
:root	$(":root")	The document's root element
:lang(*language*)	$("p:lang(de)")	All <p> elements with a lang attribute value starting with "de"

[attribute]	$("[href]")	All elements with a href attribute
[attribute=value]	$("[href='default.htm']")	All elements with a href attribute value equal to "default.htm"
[attribute!=value]	$("[href!='default.htm']")	All elements with a href attribute value not equal to "default.htm"
[attribute$=value]	$("[href$='.jpg']")	All elements with a href attribute value ending with ".jpg"
[attribute|=value]	$("[title|='Tomorrow']")	All elements with a title attribute value equal to 'Tomorrow', or starting with 'Tomorrow' followed by a hyphen
[attribute^=value]	$("[title^='Tom']")	All elements with a title attribute value starting with "Tom"
[attribute~=value]	$("[title~='hello']")	All elements with a title attribute value containing the specific word "hello"
[attribute*=value]	$("[title*='hello']")	All elements with a title attribute value containing the word "hello"
:input	$(":input")	All input elements
:text	$(":text")	All input elements with type="text"
:password	$(":password")	All input elements with type="password"
:radio	$(":radio")	All input elements with type="radio"
:checkbox	$(":checkbox")	All input elements with type="checkbox"
:submit	$(":submit")	All input elements with type="submit"
:reset	$(":reset")	All input elements with type="reset"
:button	$(":button")	All input elements with type="button"
:image	$(":image")	All input elements with type="image"
:file	$(":file")	All input elements with type="file"
:enabled	$(":enabled")	All enabled input elements
:disabled	$(":disabled")	All disabled input elements
:selected	$(":selected")	All selected input elements
:checked	$(":checked")	All checked input elements

Example

- JQuery uses chaining as follows

```
$('a:contains("ECS")').parent().addClass("blue");
```

JQuery Events

- bind(eventname, function) method
  - ‘click’
  - ‘change’
  - ‘resize’

```
$(“a[@href]”).bind(“click”,function(){
     $(this).addClass(‘red’);
});
```

Other JQuery Effects

- .css(“property”, “value”)
- .css({“prop1”:”value1”, “prop2”:”value2”…})
- E.g.
  - .css(‘color’, ‘red’)

- .hide(speed) or .show(speed)
  - Where speed is ‘slow’, ‘normal’ or ‘fast’

More JQuery Changes DOM

- `.attr({“name”, “value”})`
  - sets a new attribute (or many)
- `$(“<i>hello</i>”)`
  - Creates a new element
- `$(“<i>hello</i>”).insertAfter(“div.chapter p”);`
  - Creates element and inserts it into the document
- .html() or .text() or .empty()
  - will replace matched elements with newly created elements

Example – Show/Hide the old way

```
<a href="#" onclick="toggle_visibility('foo');">Click here to toggle visibility of #foo</a>

function toggle_visibility(id) {
  var e = document.getElementById(id);

  if(e.style.display == 'block')
      e.style.display = 'none';
  else
      e.style.display = 'block';
}
```

Example – Show/Hide with jQuery

```
$().ready(function(){
  $("a").click(function(){
     $("#more").toggle("slow");
     return false;
  });
});
```

Example – Ajax the old way

```
function GetXmlHttpObject(handler) {
	var objXmlHttp = null;	//Holds the local xmlHTTP object instance

	//Depending on the browser, try to create the xmlHttp object
	if (is_ie){
			var strObjName = (is_ie5) ? 'Microsoft.XMLHTTP' : 'Msxml2.XMLHTTP';
			try{
					objXmlHttp = new ActiveXObject(strObjName);
					objXmlHttp.onreadystatechange = handler;
			}
			catch(e){
			//Object creation errored
			alert('Verify that activescripting and activeX controls are enabled');
			return;
			}
	}
			else{
			// Mozilla | Netscape | Safari
			objXmlHttp = new XMLHttpRequest();
			objXmlHttp.onload = handler;
			objXmlHttp.onerror = handler;
	}
	//Return the instantiated object
	return objXmlHttp;
}
```

Example – Ajax with jQuery

```
$.get(“serverscript.php", { name: "John", time: "2pm" }, function(data){
    alert("Data Loaded: " + data);
});

$.post(“serverscript.php", { name: "John", time: "2pm" }, function(data){
    alert("Data Loaded: " + data);
});
```

Example – Form Validation

```
$().ready(function()
{
    // validate the comment form when it is submitted
    $("#commentForm").validate();
});


<input id="cname" name="name" class="some other styles
    {required:true,minLength:2}" />
<input id="cemail" name="email" class="{required:true,email:true}" />
```